

Using Supra-Arcade Downflows as Probes of Electron Acceleration During Solar Flares

Extracting information from coronal features above flares has become more reliable with the availability of increasingly higher spatial- and temporal-resolution data in recent decades. We are now able to sufficiently probe the region high above long-duration flaring active regions where reconnection is expected to be continually occurring. Flows in the supra-arcade region, first observed with Yohkoh/SXT, have been theorized to be associated with newly-reconnected outflowing loops. High resolution data appears to confirm these assertions. Assuming that these flows are indeed reconnection outflows, then the detection of those directed toward the solar surface (i.e. downflowing) should be associated with particle acceleration between the current sheet and the loop footpoints rooted in the chromosphere. RHESSI observations of highly energetic particles with respect to downflow detections could potentially constrain electron acceleration models. I will discuss measurements of these supra-arcade downflows (SADs) in relation to reconnection model parameters and present preliminary findings comparing the downflow timings with high-energy RHESSI lightcurves.

